European Engine Power Plants Association

EUROMOT
The European Association of Internal Combustion Engine and Alternative Powertrain Manufacturers

EUROPGEN
The voice of the European generating set industry

ACER Recommendation to amend the network code on requirements for generators – Comments from the engine power plant sector

March 2024

EUGINE, EUROMOT and EUROPGEN welcome the ACER Recommendation to review the network code on requirements for grid connection of generators (NC RfG), which carries significant improvements when it comes to harmonising the grid connection requirements at EU level and making them future-proof.

As associations representing engine power plant manufacturers at European level, we would nevertheless like to highlight a certain number of issues that will hamper the level-playing field between different manufacturers and technologies. These issues are further explained below and relate to:

a. An unclear definition of "synchronous power generating module" (SPGM)
b. Lack of consideration of different response-times to LFSM-O events
c. Lack of consideration of mCHP issues with FRT requirements

Our recommendations

1. **Further clarifying the definition of "synchronous power-generating module"**
2. **Considering trade-offs in response-times to LFSM-O events**
3. **Considering trade-offs between the NC RfG and the Gas Safety Regulation**

Further clarifying the definition of "synchronous power-generating module"

With the existing text proposed by ACER in Article 2(9) and Whereas (11), the definition of a '*synchronous power generating module*' and its determination of significance in the case of a synchronous machine that can be operated independently from others is left ambiguous.

According to ACER, it is to be left to the relevant system operator to determine how a synchronous machine that can be operated independently from others should be assessed. From experience, this ambiguity leads to different interpretations of the current text in different Member States, which, in turn, results in a market barrier where the same synchronous power

generating unit cannot be sold into identical applications in different Member States because of different interpretations of the requirements.

Therefore, **manufacturers face a challenging landscape and are required to fulfil different classifications of requirements across Member States for the same power generating unit**.

For the sake of clarity, and to avoid different national interpretations and different technical requirements imposed upon a unit of the same size in different Member States, **we recommend clarifying the case of a synchronous machine that can be operated independently from others** (as suggested below).

Considering trade-offs in response-times to LFSM-O events

Article 13(3)(g) sets requirements for Limited Frequency Sensitive Mode – Overfrequency (LFSM-O) response time where a rapid decrease in active power, 45% of maximum power within 8 seconds, is defined for synchronous power generating modules. The basis for this requirement is an Implementation Guideline Document (IGD) published by ENTSO-E in 2018, which was not approved with the consensus of manufacturers. **Although this requirement may be technically possible, such operation could potentially lead to other technical, safety and emission requirements not being fulfilled.** This issue has been recognised by several Member States, which have adopted different values and, when not explicitly stated, have permitted units to operate within their capabilities.

If the amendment to Article 13(3)(g) proposed by ACER becomes a legal requirement, it will effectively exclude some products/technologies from the market. In our experience, the exemption clause ("*If the response time is greater than stated above, the power-generating facility owner shall justify the delay, providing technical evidence to the relevant TSO*") will result in lengthy and uncertain negotiations around exemptions and will not be sufficient to prevent some technologies being excluded from markets.

With this in mind, we recommend stating LFSM-O response time "shall be as fast as technically feasible" and removing the stated response times for SPGMs and PPMs.

Considering trade-offs between the NC RfG and the gas safety regulation

Micro-Combined Heat and Power (mCHP) appliances with a capacity of ≤50kW include different technologies such as engines and fuel cells. These technologies need to comply both with the network code on requirements for generators and the Gas Appliance Regulation (EU) 2016/426 (GAR).

The GAR provisions include mandatory safety measures that are incompatible with the request to meet fault-ride-through (FRT) capabilities in the amendments to NC RfG proposed by ACER. Specifically, in an under-voltage event, the power supply to the gas safety system ceases. In this situation, the gas safety system must shut-down the appliance – which is the opposite of the FRT requirement that requires the gas appliance to ride through that under-voltage fault.

With this in mind, we recommend applying Fault Ride Through (FRT) capabilities to Type A generators only when not in contradiction with other technical and safety requirements.

ANNEX

Further clarifying the definition of "synchronous power-generating module"

Text proposed by ACER	*Amendment recommendation*
~~(9)~~(11) The significance of power-generating modules should be based on their size and their effect on the overall system. Synchronous machines should be classed on the machine size and include all the components of a generating facility that normally run indivisibly. An installation containing a set of synchronous machines that cannot be operated independently from each other~~, such as combined-cycle gas turbine installation, should be assessed on the whole capacity of that installation. , such as separate alternators driven by the separate gas and steam turbines of a single combined-cycle gas turbine installation. For a facility including several such combined-cycle gas turbine installations, each should be assessed on its size, and not on the whole capacity of the facility~~Non-synchronously connected power-generating units of the same underlying technology, where they are collected together to form an economic unit and where they have a single connection point should be assessed on their aggregated capacity. Moreover, to ensure an appropriate harmonisation or rules for mass-market products, capacities of units of different ~~classes~~underlying technology, for instance, photovoltaic, electricity storage, combined heat and power installations, or V2G electric vehicles, should not necessarily be aggregated for the purpose of the determination of significance unless so agreed between the relevant system operator and the ~~demand facility owner,~~ power-generating facility owner ~~or HVDC system owner,~~ or determined by other appropriate means, where an agreement is not required.. Also, when V2G electric vehicles and associated V2G electric vehicle supply equipment are connected to a V2G electrical charging park their capacities should not be aggregated for the purpose of the determination of significance. Electricity storage integrated to a power-generating module, ~~where module is either non-synchronously connected to the network or connected through power electronics,~~ used solely for the purpose of meeting the respective requirements of this Regulation should be considered as part of such module while its capacity should not count towards the power-generating module capacity.	(11) The significance of power-generating modules should be based on their size and their effect on the overall system. Synchronous machines should be classed on the machine size and include all the components of a generating facility that normally run indivisibly. An installation containing a set of synchronous machines that cannot be operated independently from each other**, such as combined-cycle gas turbine installation, should be assessed on the whole capacity of that installation. An installation containing a set of synchronous machines that can be operated independently from each other, such as diesel or gas reciprocating engine-driven synchronous generating units, should be assessed on the individual machine size and not the whole capacity of that installation.** Non-synchronously connected power-generating units of the same underlying technology, where they are collected together to form an economic unit and where they have a single connection point should be assessed on their aggregated capacity. Moreover, to ensure an appropriate harmonisation or rules for mass-market products, capacities of units of different underlying technology, for instance, photovoltaic, electricity storage, combined heat and power installations, or V2G electric vehicles, should not necessarily be aggregated for the purpose of the determination of significance unless so agreed between the relevant system operator and the power-generating facility owner, or determined by other appropriate means, where an agreement is not required. Also, when V2G electric vehicles and associated V2G electric vehicle supply equipment are connected to a V2G electrical charging park their capacities should not be aggregated for the purpose of the determination of significance. Electricity storage integrated to a power-generating module used solely for the purpose of meeting the respective requirements of this Regulation should be considered as part of such module while its capacity should not count towards the power-generating module capacity.
Article 2 (9) 'synchronous power-generating module' or 'SPGM' means a~~n indivisible~~ set of machines which cannot be operated independently from each other and~~installations which~~ can generate electrical energy such that the frequency of the generated voltage, the generator speed and the frequency of network voltage are in a constant ratio and thus in synchronism;	Article 2 (9) 'synchronous power-generating module' or 'SPGM' means **an individual machine which can be operated independently from others, or** a set of machines which cannot be operated independently from each other and can generate electrical energy such that the frequency of the generated voltage, the generator speed and the frequency of network voltage are in a constant ratio and thus in synchronism;
Explanation	

With the existing text, the case of a synchronous machine which can be operated independently of others is left ambiguous – further wording changes are needed. The word “individual” is key here – it is essential to include wording that clarifies that the classification of a synchronous machine should be based on the individual machine capacity where they can be operated independently, and not on the whole capacity of the installation, neither on the aggregation of multiple synchronous power generating units.

Considering trade-offs in response-times to LFSM-O events

Text proposed by ACER	*Amendment recommendation*
Article 13(3) (g) the power-generating module shall be capable of operating stably during LFSM-O operation. When LFSM-O is active, the LFSM-O setpoint will prevail over any other active power setpoints which would result in an increase of active power above the LFSM-O setpoint. The power-generating module shall be able to receive and react on an external signal allowing the relevant system operator to block active power LFSM-O mode in real-time. The TSO in coordination with the relevant system operator shall define the framework conditions for the use of this function. The response time, Tresp in Figure (4)XX1, for active power decrease in case of increasing frequency, shall be as fast as technically feasible and as described below: (i) for synchronous power-generating module: less or equal to 8 seconds for an active power setpoint change of 45% maximum power. (ii) for power park module: less or equal to 2 seconds for an active power setpoint change of 50% maximum power. If the response time is greater than stated above, the power-generating facility owner shall justify the delay, providing technical evidence to the relevant TSO.	Article 13(3) (g) the power-generating module shall be capable of operating stably during LFSM-O operation. When LFSM-O is active, the LFSM-O setpoint will prevail over any other active power setpoints which would result in an increase of active power above the LFSM-O setpoint. The power-generating module shall be able to receive and react on an external signal allowing the relevant system operator to block active power LFSM-O mode in real-time. The TSO in coordination with the relevant system operator shall define the framework conditions for the use of this function. The response time, Tresp in Figure (4)XX1, for active power decrease in case of increasing frequency, shall be as fast as technically feasible**. ~~and as described below:~~** **~~(i) for synchronous power-generating module: less or equal to 8 seconds for an active power setpoint change of 45% maximum power.~~** **~~(ii) for power park module: less or equal to 2 seconds for an active power setpoint change of 50% maximum power.~~** **~~If the response time is greater than stated above, the power-generating facility owner shall justify the delay, providing technical evidence to the relevant TSO.~~**
Explanation If this draft becomes a legal requirement, it will effectively exclude some products/technologies from the market. In our experience, the exemption clause (“If the response time is greater than stated above, the power-generating facility owner shall justify the delay, providing technical evidence to the relevant TSO”) will not be enough to prevent some technologies from being excluded from markets.	

EUGINE is the voice of Europe's engine power plant industry. Our members are the leading European manufacturers of engine power plants and their key components.

Engine power plants are a flexible, efficient, reliable and sustainable technology, helping to ensure security of electricity supply and providing (renewable) electricity and heat.

EUROMOT is the voice of the key manufacturers of internal combustion engines and alternative powertrains installed in industrial non-road mobile machinery, marine and stationary applications that are operating in Europe and worldwide. Our mission is to drive smart regulation and sustainable innovation.

EUROPGEN represents the voice of the power generation industry in Europe (generating sets, BESS, fuel cells) and brings together Europe's most prominent corporate companies and trade associations in order to form a powerful and unified voice.

For further information, please contact:

EUGINE – the European Engine Power Plants Association
Boulevard A. Reyers 80, 1030 Brussels, Belgium
Annette Jantzen – Manager Policy and Public Affairs
Phone: +32 (0)27068297
Email: annette.jantzen@eugine.eu
www.eugine.eu

EUROMOT aisbl - European Association of Internal Combustion Engine Manufacturers
Rue Joseph Stevens 7, 1000 Brussels, Belgium
Dr Peter Scherm – General Manager
Phone: +32 (0) 289321-41
Email: peter.scherm@euromot.eu
www.euromot.eu

EUROPGEN – The Voice of the Generating Set Industry
17 Rue de l'amiral Hamelin, 75783 Paris Cedex 16, France
Romain Mocaër – Secretary General
Phone: +33 (0) 698 39 2530
Email: romain.mocaer@europgen.eu
www.europgen.eu